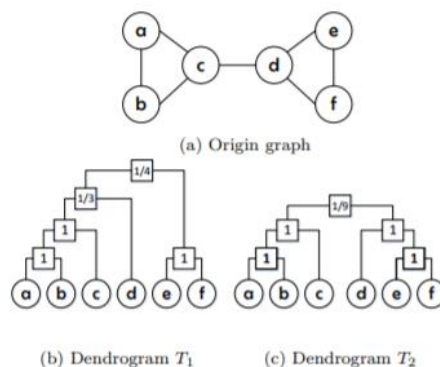


Weekly report

1 Done

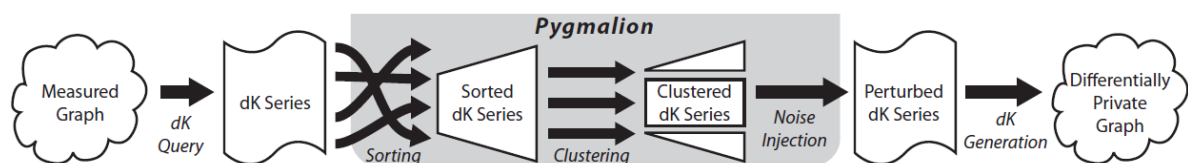
1.1 Paper Reading

- *Differentially Private Network Data Release via Structural Inference*



Authors introduces how to preserve graph structure by construct dendrograms.

- *Sharing Graphs using Differentially Private Graph Models*



In this paper, authors propose a concept called dK Series and a pipeline as shown in the figure. Actually, we can replace the concept and generalize the pipeline to generate our own approach:

Load original data → extract the “graph skeleton” (remain the significant features) → perturb the “graph skeleton” → complete the graph with noise → export the processed data.

The approach in the first paper can be involved in this pipeline. Moreover, we can provide a series of approaches to extract “skeletons” from different perspectives.

- *Uncertain Graph method based on Triadic Closure Improving Privacy*

Preserving in Social Network.

Based on triadic closure, we prioritize edges like BC, if there exists AB and AC. Considering triadic closure when adding edges leads to two advantages:

- 1) BC refers to potential relationship in a social network.

- 2) The connection between B and C make acceptable differences on the short paths between other nodes.

1.2 Privacy program

想法总结：

在之前的项目中，我们发现，使用差分隐私的时候如何调节添加噪音的大小对于用户来说是一个难题。噪音的大小在差分隐私方法中被用一个参数表示。但是要建立起这个参数的大小和实际能提供的隐私保护程度之间的关系，对经验不足的用户来说是一大难题。可以结合 **uncertainty** 方面的论文，通过可视化来解释参数值和隐私保护程度之间的关系。

除此之外，总结用差分隐私来实现图隐私的论文，可以发现一个一般化的框架（见 **section 1.1**）。除了已有文章中提到的 **dK-series** 和 **dendrogram** 以外，我们还可以根据其他需要保护的图结构提出其他的“**graph skeleton**”。比如，通过最短路径来对边进行加权之后，用户可以通过过滤提取主要结构。

下周，我们将基于以下三点调研，进一步细化想法：

- 1) 如何可视地表达图中的不确定性？
- 2) 上述框架还可以套用哪些提取图骨架的方法？
- 3) 如何将多种方法整合到通用框架中去？

2 Progress

Item	Deadline	Current progress	Remark
Privacy program	10.31	Surveying.	Have an initial idea.